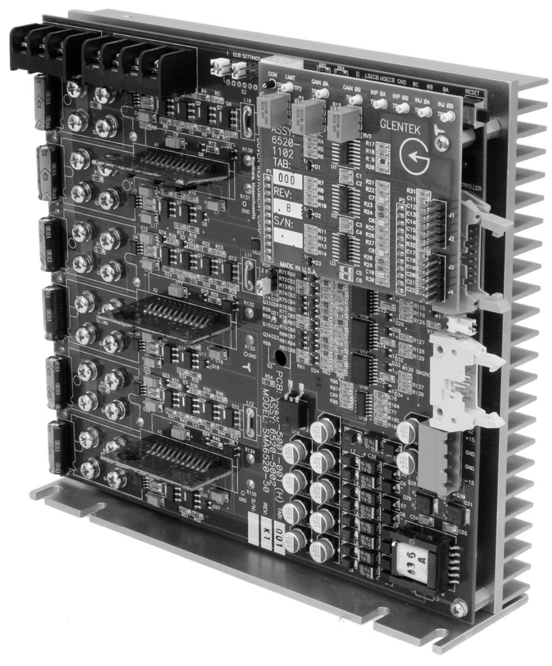
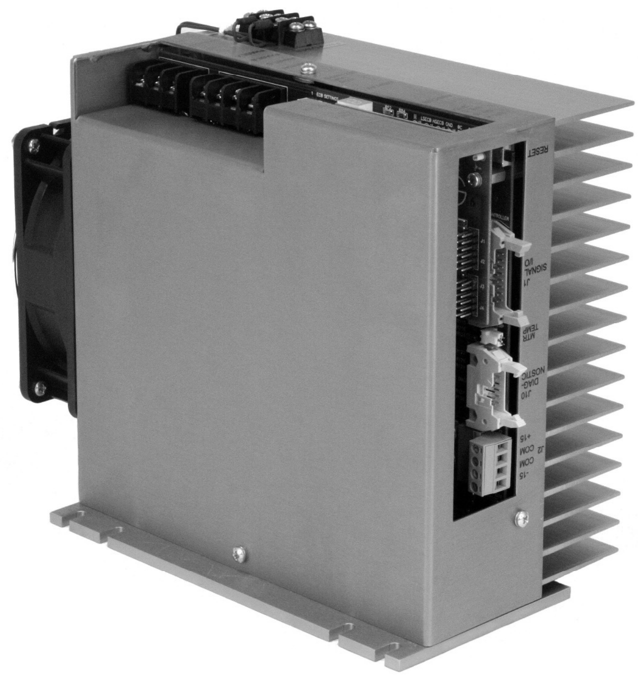
OPERATION
&
SERVICE MANUAL

Model SMA6520 SERIES

Linear Servo Amplifiers





GLENTEK

"Solutions for Motion Control"

MANUAL#: 6520-5040-000
REVISION: (5)
DATE: 06 OCT 2011

TABLE OF CONTENTS

APPENDIX

Introduction

Glentek's SMA6520 series linear servo amplifiers provide the optimum solution for applications which require high current loop bandwidth, low radiated electrical noise and zero crossover distortion. These amplifiers incorporate our latest generation ISO-BIAS current sense technology which provide one of the lowest drift linear amplifiers on the market today. These amplifiers are constructed using surface mount technology and incorporate the latest in heat transfer technology which make them one of the most powerful amplifiers for a given form factor.

Typical applications which are ideal for the SMA6520 series amplifiers include low inductance/ resistance brushless and brush motors (linear or rotary), high resolution linear brushless motor stages and voice coil motors.

The SMA6520 series is highly configurable and can operate in the following modes:

1. 2-phase sinusoidal commutation (-11 plug-in board) of three-phase brushless servo motors. In this mode, the amplifier accepts two +/- 10V analog inputs as a current command reference for two of the motor phases. The third phase is derived within the amplifier from the two reference phases. This amplifier does not use any feedback devices and is used with controllers that provide the commutation.
2. Trapezoidal commutation (-12 plug-in board) of three-phase brushless servo motors. In this mode, the amplifier accepts a +/- 10V analog input as a current command reference and utilizes the Hall Sensors which are mounted on the motor for commutation of the motor in current (torque) mode.
3. The driving of voice coils or DC brush servo motors (-11 plug-in board) in current (torque) mode. In this mode, the amplifier accepts a +/- 10V analog input as a current command reference.

FEATURES

• Ergonomic Design	Easy access to connections, adjustments and test points.
• SMT construction	Provides ultra compact size, cost competitive package and high reliability.
• Bandwidth	All servo amplifiers have a nominal 10 kHz current loop bandwidth which varies with the motor inductance.
• Linear output stage	Provides high bandwidth, low noise and zero crossover distortion.
• Multimode operation	The 2-Phase Sinusoidal servo amplifier can drive 3-phase brushless motors, voice coils or DC brush servo motors in current (torque) mode The Trapezoidal servo amplifier can drive 3-phase brushless motors in current (torque) mode. In addition, the Trapezoidal servo amplifier can close the velocity loop via feedback of a DC tachometer.
• Wide operating voltage	Operating voltages range from either +/-20 to +/-75 VDC for standard heatsink Module/large heatsink module w/fan and cover versions and +/-17 to +/-53 VAC for the 2-Axis chassis version.
• Industry std. mounting	Available in a standard heatsink Module, large heatsink module w/fan and cover and a 2-Axis chassis version. Optional custom mounting configurations are available to meet virtually any requirement.
• Two basic versions	Available in Trapezoidal and 2-Phase/3-Phase Current Mode commutated versions.
• Fault protection	Short from output to output, short from output to ground, amplifier RMS over current, amplifier under/over voltage and amplifier over temperature.
• Motor over temp.	An input is provided for a motor over temperature switch and will shut down the drive and display a fault.
• Status indicator	7-segment LED display indicates amplifier status and diagnostics.
• Dedicated inputs	+/- limits, enable, fault, motor over temperature and reset for Trapezoidal version. Enable, fault, motor over temperature and reset for 2-phase sinusoidal version.
• External fault reset	An input is provided to reset the amplifier in the event of a fault.
• Manual reset	A push button reset is available to reset a fault.
• Current limit	Peak motor current is adjustable.
• CE compliant	All servo amplifiers are CE marked.

Technical Specifications

Output Power

- 400 Watts continuous, 2000 Watts peak (heatsink module version @25°C)
- 500 Watts continuous, 2000 Watts peak (heatsink module w/fan and cover version @25°C)
- 5 amps continuous, 25 amps peak

Note 1: Current trip time and peak current is adjustable.
Note 2: Output power ratings based on Glentek or customer supplied airflow.

Input Connections

- Bipolar supply voltage: +/-20 to +/-55VDC (Standard voltage)
- Bipolar supply voltage: +/-25 to +/-75VDC (High voltage)
- Auxiliary bias supply voltage: +/-15VDC regulated, +/- 400 mA
- Command A & B analog signals: +/-20V maximum (differential)
- Fan power for large heatsink module with cover: 24VDC
- Fan power for 2-axis chassis: 120 VAC, single phase
- Manual reset Pushbutton switch
- Reset: Pulled up, Active low
- Enable: Pulled up, Active low
- +/- Limits: Pulled Up, Active low for Trapezoidal version and configurable for active low or active high for Encoder-based version
- Hall sensors: Pulled Up, Active low for Trapezoidal version
- Motor over temperature: Pulled up, Active High (normally closed switch)

Output Connections

- Motor phases A, B and C
- Fault out: Open collector, Pulled Up (5V), Active low (TTL to 24V compatible)

Bandwidth

- 10 kHz maximum and varies with motor inductance

Status Indicator

- 7-segment LED display indicated amplifier status and diagnostics

Mechanical

- Standard heatsink module version (Length: 8.0”, Width: 2.5”, Height: 7.5”)
- Large heatsink module w/fan & cover version (Length: 10.17”, Width: 5.31”, Height: 7.95”)
- 2-axis chassis version (Length: 12.75”, Width: 10.25”, Height: 8.0”)

Environmental

- Operating temperature 0 to 65C
- Storage temperature -40 to 80C
- Humidity 5 – 95% relative (non-condensing)

MODEL NUMBERS

Glentek's SMA6520 series linear servo amplifiers are offered in two module styles; the standard 50HS and the 50HF (which has a cover and a fan). Both modules accept either of the available plug in boards (2Φ sinusoidal commutation or Hall/Trapezoidal commutation).

A baseplate design with 2 slots available for modules has a bridge rectifier and filter capacitors for the required bipolar DC voltage for the modules along with the +/-15VDC logic supply needed for the bias voltages.

MODULES: First 4 Columns **MULTIAXIS BASEPLATES: All Columns**						
MODEL NUMBERING						**DESCRIPTION**
SMA6520-	____-	__-	___-	__-	_	Linear Amplifier Series, Module & Baseplate Configuration
	50HS					Standard Heatsink Module
	50HF					Large Heatsink Module, w/ Fan & Cover
		11				2 Phase Sinusoidal Current Mode Plug In Board (Personality Board)
		12				Hall Sensor/Trapezoidal Commutation, Current Mode Plug In Board (Personality Board)
		24				Encoder Based Sinusoidal Commutation, Current or Velocity Mode Plug In Board (Personality Board)
			003			Standard Voltage Configuration Power Board, +/-55VDC
			006			High Voltage Configuration Power Board, +/-75VDC
				1		Module or Module w/ Fan & cover
				2A	0	2 Axis Baseplate w/ Fans and Power Supplies, 0 = no modules installed
				2A	1	2 Axis Baseplate w/ Fans and Power Supplies, 1 = 1 module installed
				2A	2	2 Axis Baseplate w/ Fans and Power Supplies, 2 = 2 modules installed

Note: Voice coil and DC brush modes are also available upon request.

STARTUP

Refer to the technical specifications page and the drawings in the appendix for the information needed to supply the correct power and to wire the model you are starting up. When the wiring is completed and verified, the initial pot adjustments can be made. Turn on the bias supply (+/-15Vdc), it is not necessary to connect the load or turn on the main bipolar supply yet.

2 Phase Sinusoidal Current Mode pot adjustments (Refer to 6520-11 schematic in the appendix):

Current Limit (RV1): The current limit pot sets the peak output current the amplifier can de liver to the load. The range is +/-3A to +/-25A. Set RV1 by adjusting the pot to the desired value by measuring the voltage at TP2, 0 volts is the minimum and 5 volts is the maximum current.

Input Signal Gain: There are two gain pots, one for each phase, the adjustment procedure is the same for both. The pots (RV2 & RV3) scale your input signals to the desired currents you wish to command. Apply a known input signal and adjust the pot to the desired current using a scale factor of 4.5A/V at the test point connected to the pot wiper. Repeat for the second phase. Avoid setting the gain such that the input signals command currents above the current limit. This will prevent your current command signal from being clipped.

Hall Sensor/Trapezoidal Output Current Mode pot adjustments (Schematic 6520-12):

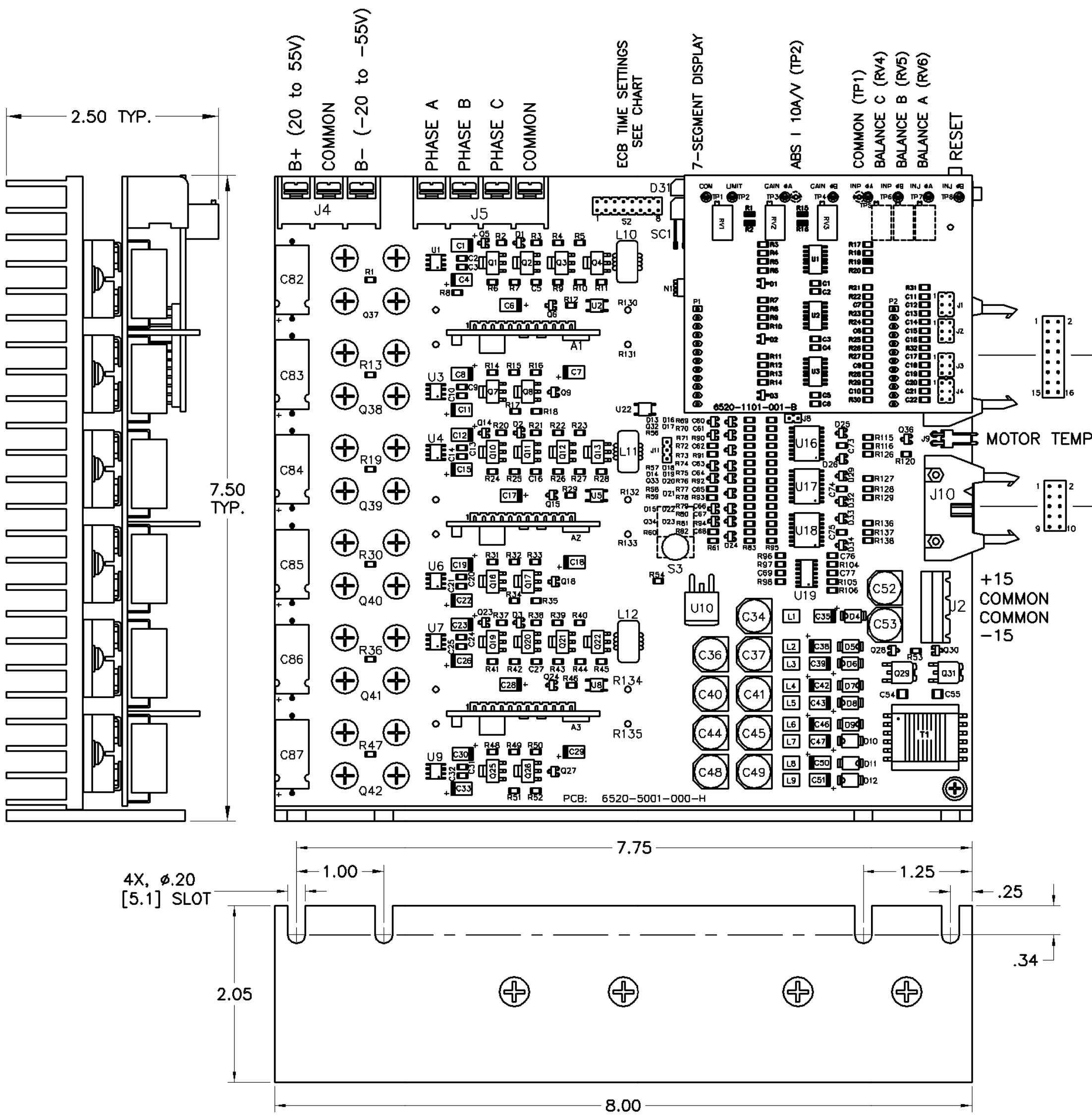
Current Limit (RV2): The current limit pot sets the peak output current the amplifier can de liver to the load. The range is +/-0A to +/-25A. In order to set the current limit, temporarily remove the microshunt at J4. Then adjust RV2 until the measured voltage at TP2 equals the desired peak current (use a scale factor of 4.5A/V). Restore the J4 microshunt to its original (current mode) position.

Balance (RV1): The balance pot can be used to deal with offsets in the amplifier and offset in the input signal. A good initial setting is to set the wiper to the midpoint. After the load is up and running final adjustment can be made if needed.

Input Signal Gain (RV5): The signal input gain pot scales your input signal to the current you want to command. Apply a known input signal and adjust RV5 to the desired voltage at TP2 using a scale factor of 4.5A/V. Avoid setting the gain such that the input signal commands current above the current limit. This will prevent your current command signal from being clipped.

These pot adjustments may be all the adjustment needed. Continue with the startup process by connecting the load and applying the main power to the amplifier.

APPENDIX



J1-1: PHASE A+ INPUT
2: PHASE A- INPUT
3: PHASE B+ INPUT
4: PHASE B- INPUT
5: COMMON
6: COMMON
7: N/C
8: COMMON
9: N/C
10: COMMON
11: ENABLE*
12: COMMON
13: FAULT OUT
14: COMMON
15: RESET IN*
16: COMMON
* = ACTIVE LOW

J10 DIAGNOSTICS

REVISION HISTORY

ZONE	REV	DESCRIPTION	ECO	DATE	CHANGED	APPD
-	A	INITIAL RELEASE	2456	28FEB06	L.L.	J.M.
-	B	CHANGED FACTORY DEFAULT SETTING ON PG.2	2681	08MAR07	R.M.L.	C.V.
-	C	UPDATE PCB ASSEMBLY	3223	23DEC09	M.T.	C.V.

Specifications and Features

Supply Voltage	Tab 003 +/- 20 V - 55V Tab 006 +/-25 V - 75V
Low Voltage Supply	±15 VDC
Heatsink Thermal Switch	75 °C
Peak Current	25 Amps (Adjustable)
Input Command Signals	ØA, ØB, Differential input, ± 10Vdc Typical
Fault Out (Programmable Level)	TTL and 24V compatible.
Current Monitor Out	10 A/V, Absolute Value @ TP2
Low Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 5 A Trip Time: 1.25 Sec. Configurable
High Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 20 A Trip Time: 1 mSec. Configurable
Bus Over Voltage	Trips nominally at ±60 VDC.
Bus Under Voltage	Trips nominally at 16 VDC.
Amplifier Over temperature	Amplifier faults and is inhibited if the heatsink temp. reaches 75 °C
Operating Temperature	0 °C to +65 °C
Storage Temperature	-40 °C to +80 °C
Humidity	5% to 95% non-condensing
Dimension (L x H x W - Inches)	8.00x 7.50 x 2.50

Mating Connectors

J1: 3M, 3452-6616, Ribbon Cable Style (not supplied)
J2: Phoenix, p/n 1757035 (supplied)
J10: Consult Glentek (not supplied)

Electronic Circuit Breaker Trip Time

LS/ECB (Low Speed)					HS/ECB (High Speed)				
S2 Position				Time (ms)	S2 Position				Time (ms)
1	2	3	4		5	6	7	8	
0	0	0	0	200ms	0	0	0	0	1ms *
0	0	0	1	250ms	0	0	0	1	2ms
0	0	1	0	300ms	0	0	1	0	4ms
0	0	1	1	350ms	0	0	1	1	6ms
0	1	0	0	400ms	0	1	0	0	8ms
0	1	0	1	450ms	0	1	0	1	10ms
0	1	1	0	500ms	0	1	1	0	15ms
0	1	1	1	550ms	0	1	1	1	20ms
1	0	0	0	600ms	1	0	0	0	30ms
1	0	0	1	800ms	1	0	0	1	40ms
1	0	1	0	1000ms	1	0	1	0	50ms
1	0	1	1	1250ms	1	0	1	1	60ms
1	1	0	0	2500ms	1	1	0	0	70ms
1	1	0	1	3750ms	1	1	0	1	80ms
1	1	1	0	5000ms	1	1	1	0	90ms
1	1	1	1	10000ms	1	1	1	1	100ms

* = FACTORY DEFAULT
0 = SWITCH OPEN (SHUNT REMOVED)
1 = SWITCH CLOSED (SHUNT INSTALLED)
ALL TIMES HAVE A TOLERANCE OF -0. +0.5MS

Status Display

- 0 NORMAL OPERATION
- 5 HIGH SPEED ECB TRIPPED (SHORT)
- L LOW SPEED ECB TRIPPED
- H HEATSINK OVER TEMPERATURE (AIRPAX 67F075 75° C) or MOTOR TEMP SWITCH OPEN
- b OVER VOLTAGE FAULT (BUS) + or - BUS VOLTAGE OVER 60V FOR 120ms
- U UNDER VOLTAGE FAULT (BUS) + or - BUS VOLTAGE UNDER 16V FOR 120ms
- C CLAMP CONDITION EXISTS AMPLIFIER IS DISABLED DUE TO FAULT OR ENABLE* INPUT
- E ENCODER/HALL FAULT

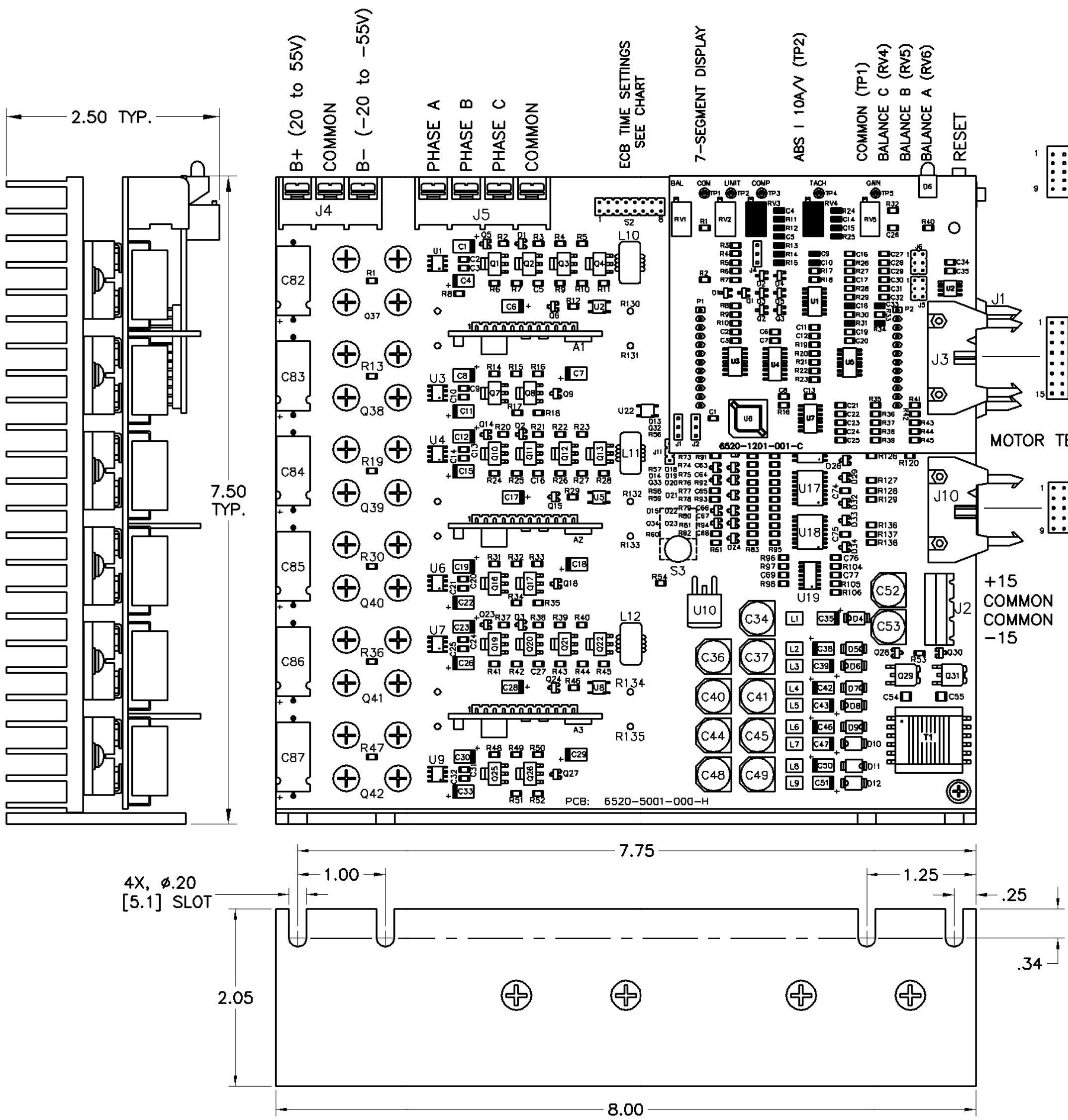
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	APPROVAL	DATE
TOLERANCES ARE AS FOLLOWS: DECIMAL: XX = ±0.01, XXX = ±0.005; ANGULAR: < = ±0.5°	DWN BY: S.A.S.	21FEB00
	CHK BY: M.H.	21FEB00
FINISH: 125 √ MAXIMUM	APP BY: R.A.D.	21FEB00

GLENTEK "Solutions for Motion Control"
208 Standard Street
El Segundo, CA 90245 USA
310.322.3026 FAX 310.322.7709
www.glentek.com

DRAWING TITLE: INSTALLATION, SMA6520-50HS-11-00x 2/ 3 PHASE,CUR MODE, MODULE

SIZE: C | MODEL: SMA6520 | DRAWING NUMBER: 6520-5030-000 | REV: C
SCALE: .875:1 | FILE NAME: 6520-5030-000-C.DWG | SHEET 1 OF 1
CONFIGURATION CODE: -

REVISION HISTORY						
ZONE	REV	DESCRIPTION	ECO	DATE	CHANGED	APPD
-	A	INITIAL RELEASE	3223	27APR10	M.T.	J.M.



J3-1: N/C
2: N/C
3: COMMON
4: S1 (HALL SENSORS)
5: S2 (HALL SENSORS)
6: S3 (HALL SENSORS)
7: HALL +5V
8: N/C
9: COMMON
10: N/C

J1-1: SIG +
2: SIG -
3: N/C
4: N/C
5: COMMON
6: COMMON
7: LIMIT +
8: COMMON
9: LIMIT -
10: COMMON
11: ENABLE*
12: COMMON
13: FAULT OUT
14: COMMON
15: RESET IN*
16: COMMON

* = ACTIVE LOW

Specifications and Features

Supply Voltage	TAB 003 ± 20 V - 55V TAB 006 ±25 V - 75V
Low Voltage Supply	±15 VDC
Heatsink Thermal Switch	75 °C
Peak Current	25 Amps (Adjustable)
Input Command Signal	Differential input, +/-10VDC Typical
Fault Out (Programmable Level)	TTL and 24V compatible.
Current Monitor Out	10 A/V, Absolute Value @ TP2
Low Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 5 A Trip Time: 1.25 Sec. Configurable
High Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 20 A Trip Time: 1 mSec. Configurable
Bus Over Voltage	Trips nominally at ±60 VDC.
Bus Under Voltage	Trips nominally at 16 VDC.
Amplifier Over temperature	Amplifier faults and is inhibited if the heatsink temp. reaches 75 °C
Operating Temperature	0 °C to +65 °C
Storage Temperature	-40 °C to +80 °C
Humidity	5% to 95% non-condensing
Dimension (L x H x W - inches)	10.17 x 5.31 x 7.95

Mating Connectors

J1: 3M, 3452-6616, Ribbon Cable Style (not supplied)
J2: Phoenix, p/n 1757035 (supplied)
J10: Consult Glentek (not supplied)

Electronic Circuit Breaker Trip Time

LS/ECB (Low Speed)					HS/ECB (High Speed)				
S2 Position				Time (ms)	S2 Position				Time (ms)
1	2	3	4		5	6	7	8	
0	0	0	0	200ms	0	0	0	0	1ms *
0	0	0	1	250ms	0	0	0	1	2ms
0	0	1	0	300ms	0	0	1	0	4ms
0	0	1	1	350ms	0	0	1	1	6ms
0	1	0	0	400ms	0	1	0	0	8ms
0	1	0	1	450ms	0	1	0	1	10ms
0	1	1	0	500ms	0	1	1	0	15ms
0	1	1	1	550ms	0	1	1	1	20ms
1	0	0	0	600ms	1	0	0	0	30ms
1	0	0	1	800ms	1	0	0	1	40ms
1	0	1	0	1000ms	1	0	1	0	50ms
1	0	1	1	1250ms	1	0	1	1	60ms
1	1	0	0	2500ms	1	1	0	0	70ms
1	1	0	1	3750ms	1	1	0	1	80ms
1	1	1	0	5000ms	1	1	1	0	90ms
1	1	1	1	10000ms	1	1	1	1	100ms

* = FACTORY DEFAULT
0 = SWITCH OPEN (SHUNT REMOVED)
1 = SWITCH CLOSED (SHUNT INSTALLED)
ALL TIMES HAVE A TOLERANCE OF -0. +0.5MS

Status Display

- 0 NORMAL OPERATION
- S HIGH SPEED ECB TRIPPED (SHORT)
- L LOW SPEED ECB TRIPPED
- H HEATSINK OVER TEMPERATURE (AIRPAX 67F075 75°C) or MOTOR TEMP SWITCH OPEN
- b OVER VOLTAGE FAULT (BUS) + or - BUS VOLTAGE OVER 60V FOR 120ms
- U UNDER VOLTAGE FAULT (BUS) + or - BUS VOLTAGE UNDER 16V FOR 120ms
- C CLAMP CONDITION EXISTS AMPLIFIER IS DISABLED DUE TO FAULT OR ENABLE* INPUT
- E ENCODER/HALL FAULT

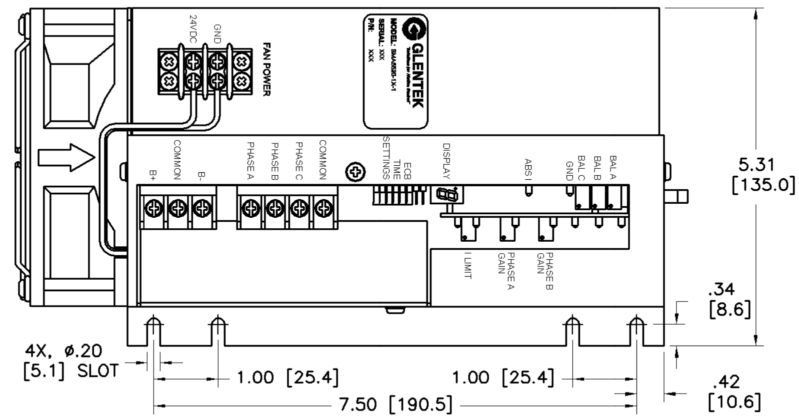
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	APPROVAL		DATE
TOLERANCES ARE AS FOLLOWS: DECIMAL: XX = ±0.01, XXX = ±0.005	DWN BY:	M.T.	27APR10
ANGULAR: < = ±0.5°	CHK BY:	C.V.	27APR10
FINISH: 125 √ MAXIMUM	APP BY:	J.M.	27APR10

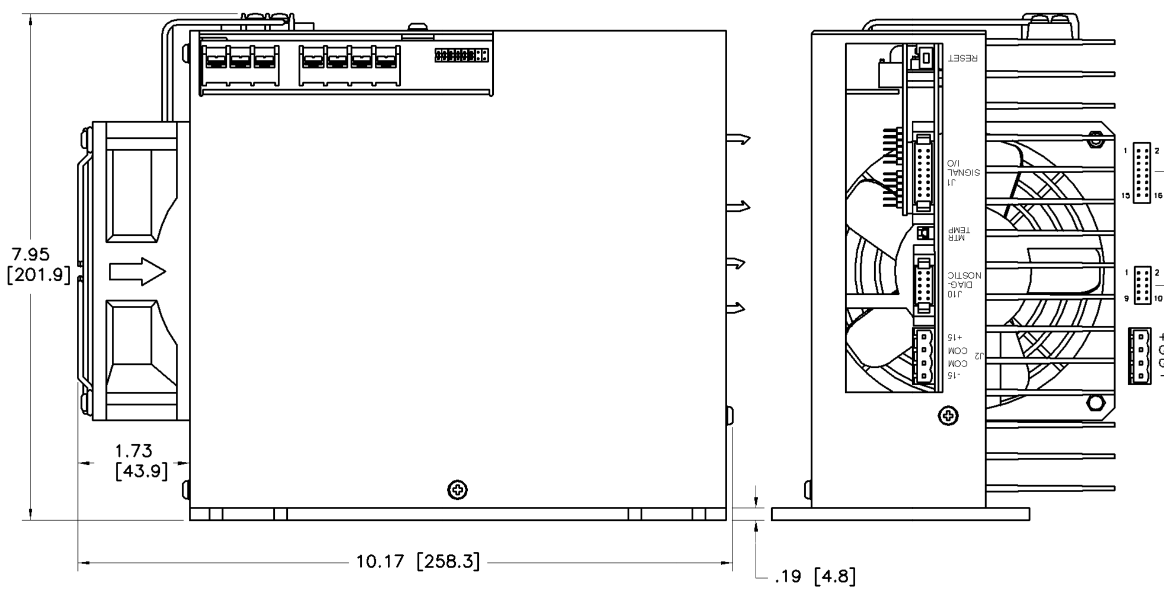
GLENTEK "Solutions for Motion Control"
208 Standard Street
El Segundo, CA 90245 USA
310.322.3026 FAX 310.322.7709
www.glentek.com

DRAWING TITLE: INSTALLATION, SMA6520-50HS-12-00x HALL/TRAP,CUR MODE, MODULE

SIZE	MODEL	DRAWING NUMBER	REV
C	SMA6520	6520-5051-000	A
SCALE: 1:1	FILE NAME: 6520-5051-000-A.DWG	SHEET 1 OF 1	

CONFIGURATION CODE: -





Status Display

- **0** NORMAL OPERATION
- **S** HIGH SPEED ECB TRIPPED (SHORT)
- **L** LOW SPEED ECB TRIPPED
- **H** HEATSINK OVER TEMPERATURE (AIRPAX 67F075 75 C) or MOTOR TEMP SWITCH OPEN
- **b** OVER VOLTAGE FAULT (BUS) + or – BUS VOLTAGE OVER 60V FOR 120ms
- **U** UNDER VOLTAGE FAULT (BUS) + or – BUS VOLTAGE UNDER 16V FOR 120ms
- **C** CLAMP CONDITION EXISTS AMPLIFIER IS DISABLED DUE TO FAULT OR ENABLE* INPUT
- **E** ENCODER/HALL FAULT

J1–1: PHASE A+ INPUT
2: PHASE A– INPUT
3: PHASE B+ INPUT
4: PHASE B– INPUT
5: COMMON
6: COMMON
7: N/C
8: COMMON
9: N/C
10: COMMON
11: ENABLE*
12: COMMON
13: FAULT OUT
14: COMMON
15: RESET IN*
16: COMMON
* = ACTIVE LOW

J10 DIAGNOSTICS

+15
GROUND
GROUND
–15

REVISIONS					
REV	DESCRIPTION	ECO	DATE	CHG BY	APPD BY
1	INITIAL RELEASE	3225	20OCT09	M.T.	J.M.

Specifications and Features

Supply Voltage	Tab 003 ± 20 V - 55V Tab 006 ±25 V - 75V
Low Voltage Supply	±15 VDC
Heatsink Thermal Switch	75 °C
Peak Current	25 Amps (Adjustable)
Input Command Signals	ØA, ØB, Differential input, ± 10Vdc Typical
Fault Out (Programmable Level)	TTL and 24V compatible.
Current Monitor Out	10 A/V, Absolute Value @ TP2
Low Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 5 A Trip Time: 1.25 Sec. Configurable
High Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 20 A Trip Time: 1 mSec. Configurable
Bus Over Voltage	Trips nominally at ±60 VDC.
Bus Under Voltage	Trips nominally at 16 VDC.
Amplifier Over temperature	Amplifier faults and is inhibited if the heatsink temp. reaches 75 °C
Operating Temperature	0 °C to +65 °C
Storage Temperature	-40 °C to +80 °C
Humidity	5% to 95% non-condensing
Dimension (L x H x W - inches)	10.17x 5.31 x 7.95

Mating Connectors

- J1: 3M, p/n 3452-6616, Ribbon Cable Style (not supplied)
- J2: Phoenix p/n 1757035 (supplied)
- J10: Consult Glentek (not supplied)

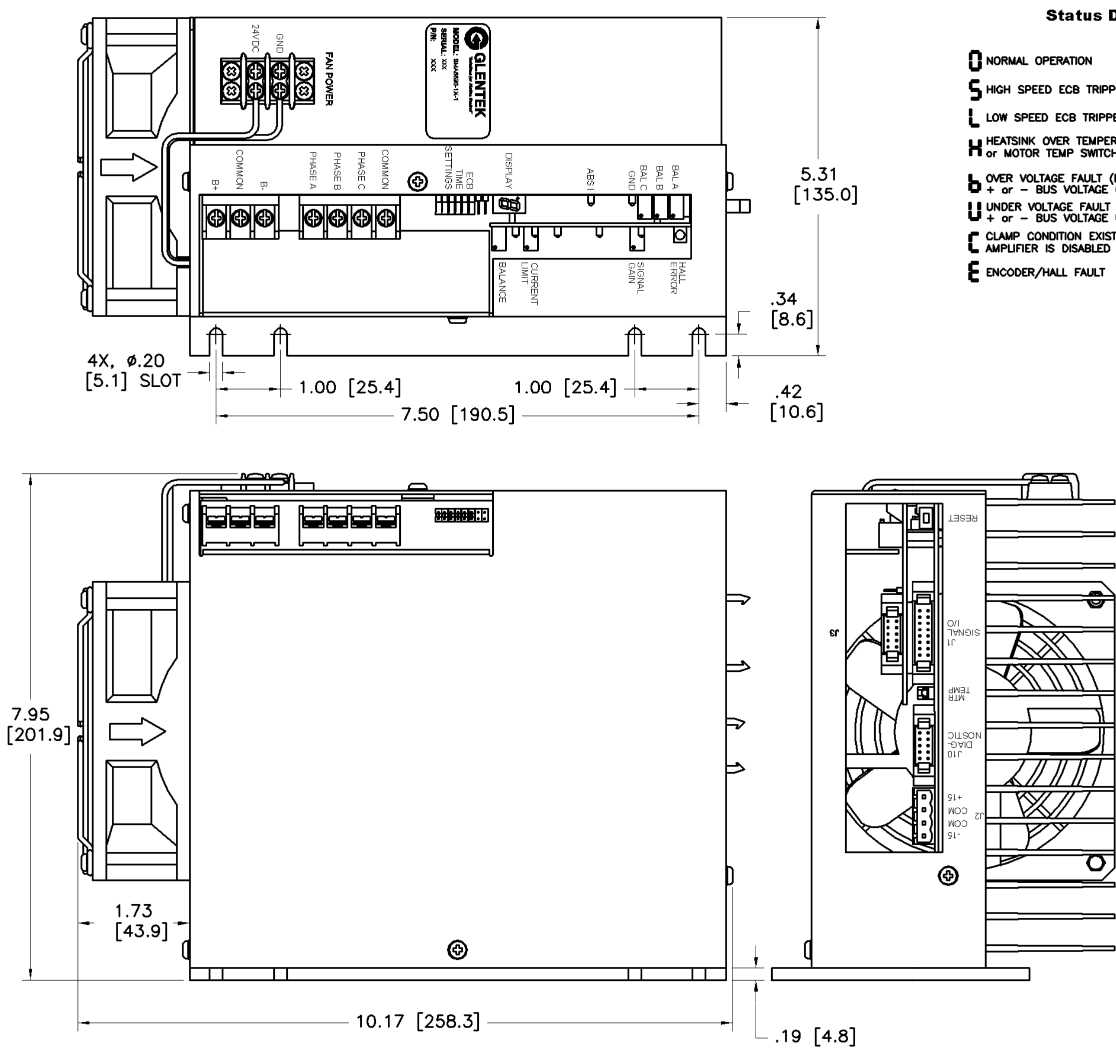
Electronic Circuit Breaker Trip Time

LS/ECB (Low Speed)					HS/ECB (High Speed)				
S2 Position				Time (ms)	S2 Position				Time (ms)
1	2	3	4		5	6	7	8	
0	0	0	0	200ms	0	0	0	0	1ms *
0	0	0	1	250ms	0	0	0	1	2ms
0	0	1	0	300ms	0	0	1	0	4ms
0	0	1	1	350ms	0	0	1	1	6ms
0	1	0	0	400ms	0	1	0	0	8ms
0	1	0	1	450ms	0	1	0	1	10ms
0	1	1	0	500ms	0	1	1	0	15ms
0	1	1	1	550ms	0	1	1	1	20ms
1	0	0	0	600ms	1	0	0	0	30ms
1	0	0	1	800ms	1	0	0	1	40ms
1	0	1	0	1000ms	1	0	1	0	50ms
1	0	1	1	1250ms *	1	0	1	1	60ms
1	1	0	0	2500ms	1	1	0	0	70ms
1	1	0	1	3750ms	1	1	0	1	80ms
1	1	1	0	5000ms	1	1	1	0	90ms
1	1	1	1	10000ms	1	1	1	1	100ms

× = FACTORY DEFAULT
0 = SWITCH OPEN (SHUNT REMOVED)
1 = SWITCH CLOSED (SHUNT INSTALLED)
ALL TIMES HAVE A TOLERANCE OF -0. +0.5MS

NOTES:
1. DIMENSIONS ARE IN INCHES [MILLIMETERS].
2. MAINTAIN A MIN. OF 2" – 3" OF SPACE AT BOTH ENDS AND TOP OF THE AMPLIFIER TO ENSURE PROPER VENTILATION FOR THE UNIT.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. BREAK ALL SHARP EDGES. SURFACE ROUGHNESS .005 TO .015. TOLERANCES: DECIMALS .XX ± .01, .XXX ± .005; ANGULAR ± 0.5°. MATERIAL: –. FINISH: –.
MODEL: SMA6520 | DRAWN BY: M.T. | DATE: 20OCT09 | CHECKED BY: J.M. | APPROVED BY: J.M.
GLENTEK "Solutions for Motion Control" 208 Standard Street, El Segundo, CA 90234 USA 310.322.3026 FAX 310.322.7709 www.glentek.com
TITLE: SMA6520-50HF-11-00x,MODULE 2/3 PHASE,CUR MODE,24VDC FAN
SIZE: D | DRAWING NUMBER: 6520-5042-000 | REV: A
SCALE: 1.125:1 | FILE: 6520-5042-000-A.DWG | SHEET 1 OF 1
REF. / CONFIGURATION CODE NUMBER:



Status Display

- 0 NORMAL OPERATION
- S HIGH SPEED ECB TRIPPED (SHORT)
- L LOW SPEED ECB TRIPPED
- H HEATSINK OVER TEMPERATURE (AIRPAX 67F075 75 C) or MOTOR TEMP SWITCH OPEN
- b OVER VOLTAGE FAULT (BUS) + or − BUS VOLTAGE OVER 60V FOR 120ms
- U UNDER VOLTAGE FAULT (BUS) + or − BUS VOLTAGE UNDER 16V FOR 120ms
- C CLAMP CONDITION EXISTS AMPLIFIER IS DISABLED DUE TO FAULT OR ENABLE* INPUT
- E ENCODER/HALL FAULT

J3-1: N/C
2: N/C
3: COMMON
4: S1 ⎤
5: S2 ⎬ HALL SENSORS
6: S3 ⎦
7: HALL +5V
8: N/C
9: COMMON
10: N/C

J1-1: SIG +
2: SIG −
3: N/C
4: N/C
5: COMMON
6: COMMON
7: LIMIT +
8: COMMON
9: LIMIT −
10: COMMON
11: ENABLE*
12: COMMON
13: FAULT OUT
14: COMMON
15: RESET IN*
16: COMMON
* = ACTIVE LOW

J10 DIAGNOSTICS

+15
GROUND
GROUND
−15

REVISIONS

REV	DESCRIPTION	ECO	DATE	CHG BY	APP'D BY
A	INITIAL RELEASE	3223	26APR10	M.T.	J.M.

Specifications and Features

Supply Voltage	Tab 003 ± 20 V - 55V Tab 006 ± 25 V - 75V
Low Voltage Supply	±15 VDC
Heatsink Thermal Switch	75 °C
Peak Current	25 Amps (Adjustable)
Input Command Signal	Differential input, +/- 10Vdc typical
Fault Out (Programmable Level)	TTL and 24V compatible.
Current Monitor Out	10 A/V, Absolute Value @ TP2
Low Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 5 A Trip Time: 1.25 Sec. Configurable
High Speed Electronic Circuit Breaker (LS/ECB)	Trip Level: 20 A Trip Time: 1 mSec. Configurable
Bus Over Voltage	Trips nominally at ±60 VDC.
Bus Under Voltage	Trips nominally at 16 VDC.
Amplifier Over temperature	Amplifier faults and is inhibited if the heatsink temp. reaches 75 °C
Operating Temperature	0 °C to +65 °C
Storage Temperature	-40 °C to +80 °C
Humidity	5% to 95% non-condensing
Dimension (L x H x W - inches)	10.17x 5.31 x 7.95

Mating Connectors

- J1: 3M, p/n 3452-6616, Ribbon Cable Style (not supplied)
- J2: Phoenix p/n 1757035 (supplied)
- J3: (not supplied)
- J10: Consult Glentek (not supplied)

Electronic Circuit Breaker Trip Time

LS/ECB (Low Speed)					HS/ECB (High Speed)				
S2 Position				Time (ms)	S2 Position				Time (ms)
1	2	3	4		5	6	7	8	
0	0	0	0	200ms	0	0	0	0	1ms *
0	0	0	1	250ms	0	0	0	1	2ms
0	0	1	0	300ms	0	0	1	0	4ms
0	0	1	1	350ms	0	0	1	1	6ms
0	1	0	0	400ms	0	1	0	0	8ms
0	1	0	1	450ms	0	1	0	1	10ms
0	1	1	0	500ms	0	1	1	0	15ms
0	1	1	1	550ms	0	1	1	1	20ms
1	0	0	0	600ms	1	0	0	0	30ms
1	0	0	1	800ms	1	0	0	1	40ms
1	0	1	0	1000ms	1	0	1	0	50ms
1	0	1	1	1250ms *	1	0	1	1	60ms
1	1	0	0	2500ms	1	1	0	0	70ms
1	1	0	1	3750ms	1	1	0	1	80ms
1	1	1	0	5000ms	1	1	1	0	90ms
1	1	1	1	10000ms	1	1	1	1	100ms

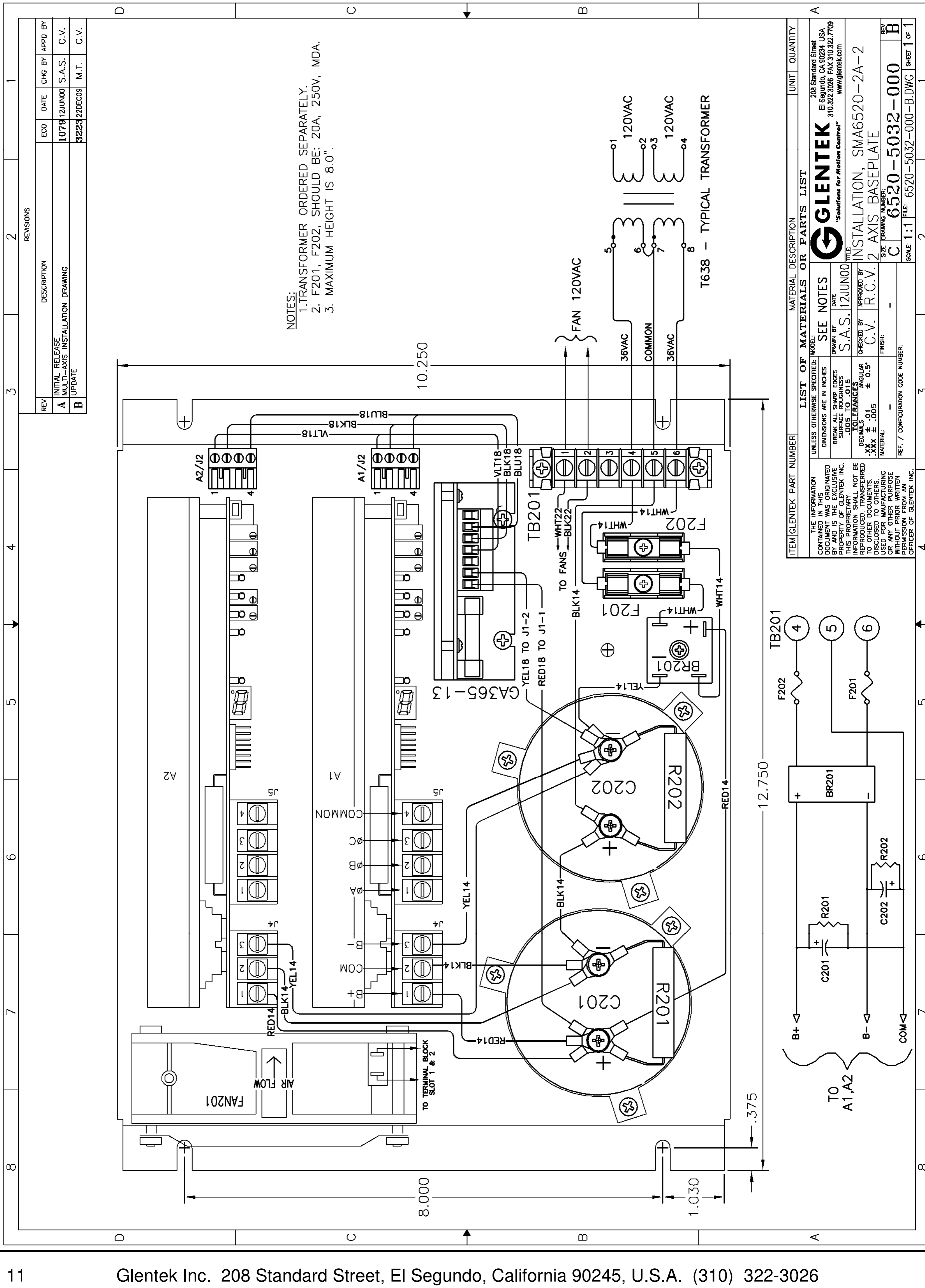
× = FACTORY DEFAULT
0 = SWITCH OPEN (SHUNT REMOVED)
1 = SWITCH CLOSED (SHUNT INSTALLED)
ALL TIMES HAVE A TOLERANCE OF -0, +0.5MS

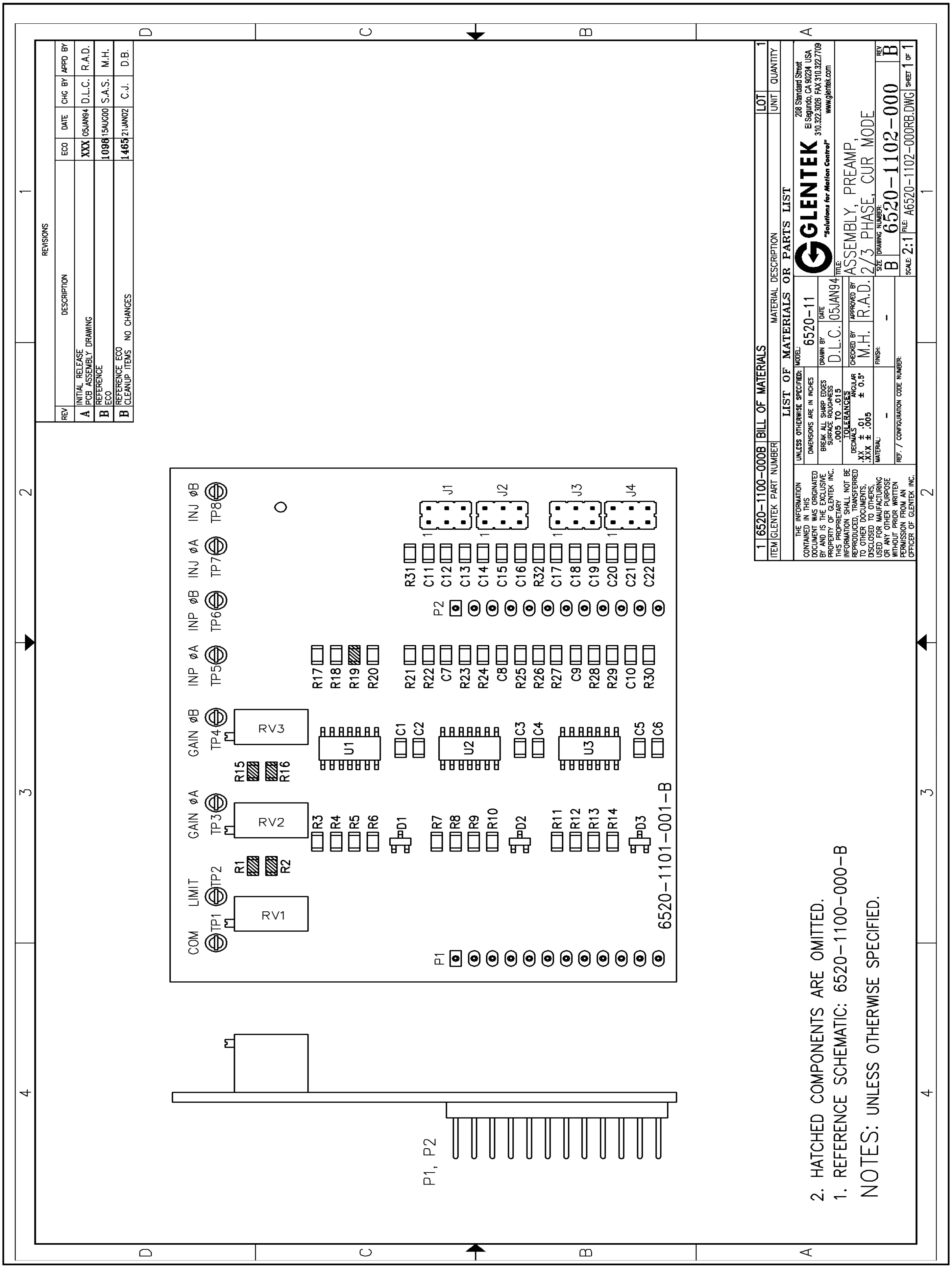
NOTES:
1. DIMENSIONS ARE IN INCHES [MILLIMETERS].
2. MAINTAIN A MIN. OF 2" – 3" OF SPACE AT BOTH ENDS AND TOP OF THE AMPLIFIER TO ENSURE PROPER VENTILATION FOR THE UNIT.

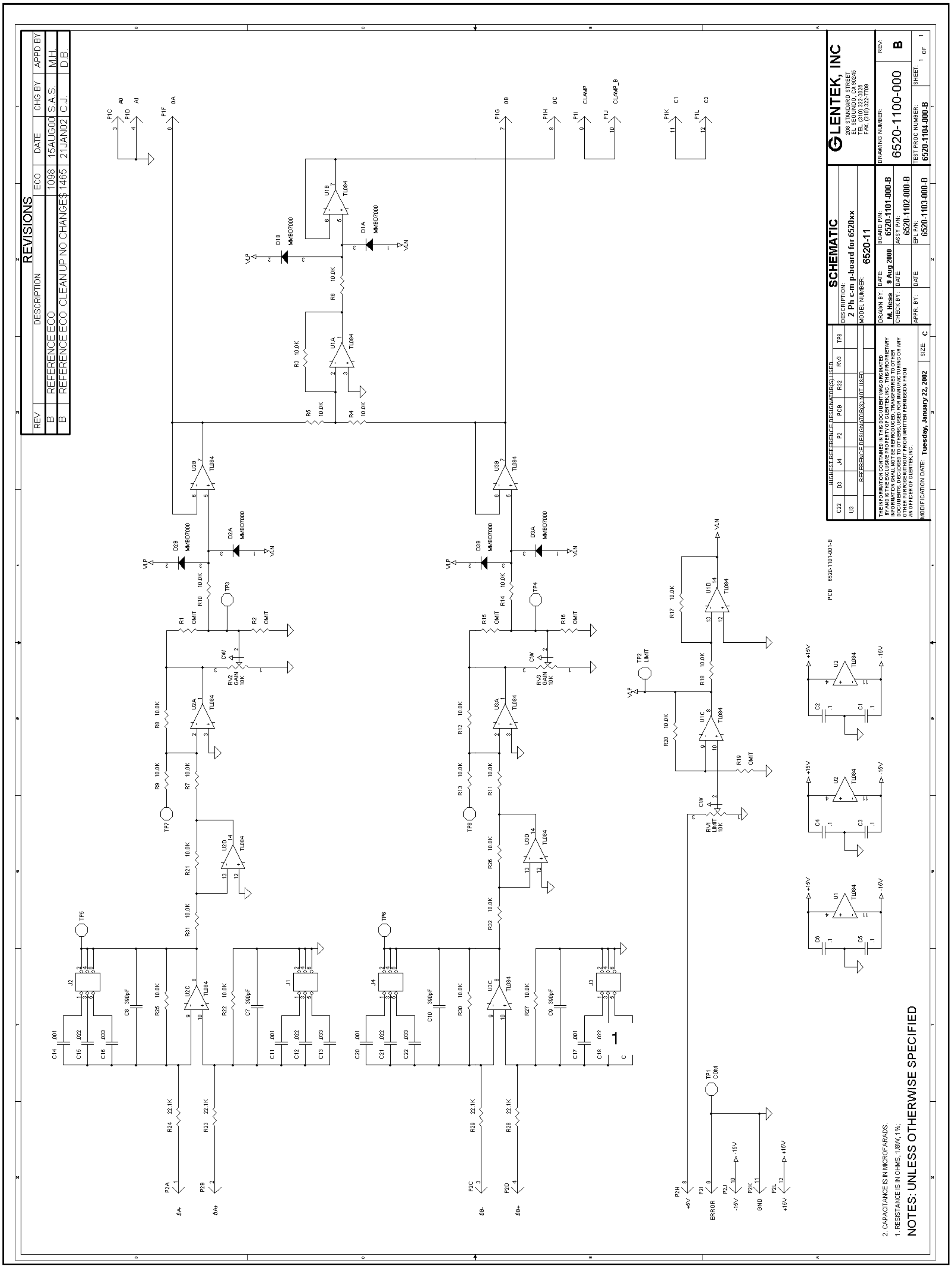
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. BREAK ALL SHARP EDGES. SURFACE ROUGHNESS .005 TO .015. TOLERANCES: DECIMALS .XX ± .01, .XXX ± .005; ANGULAR ± 0.5°
MATERIAL: –
FINISH: –
MODEL: SMA6520
DRAWN BY: M.T. DATE: 26APR10
CHECKED BY: C.V. APPROVED BY: J.M.
REF. / CONFIGURATION CODE NUMBER:

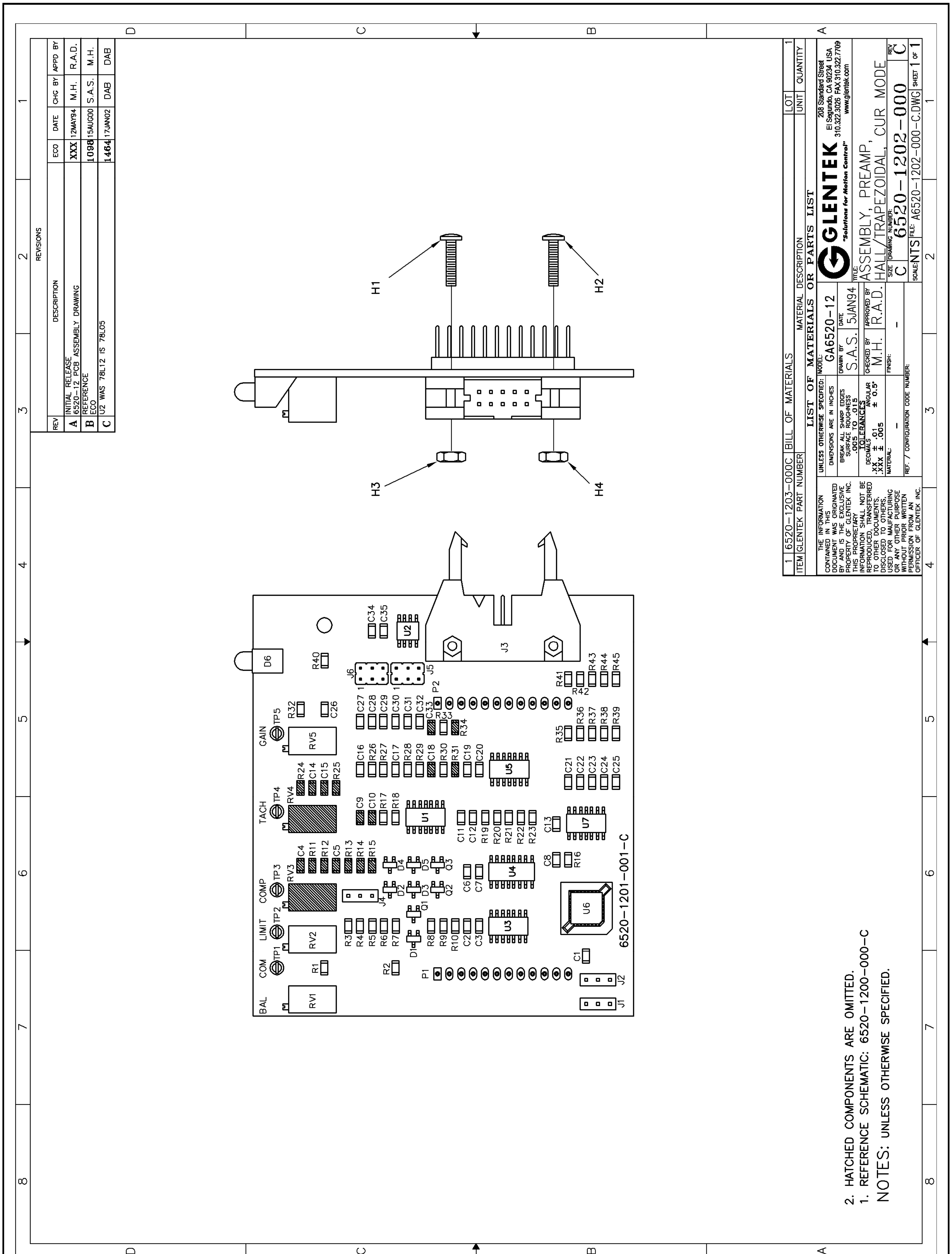
GLENTEK "Solutions for Motion Control"
208 Standard Street
El Segundo, CA 90234 USA
310.322.3026 FAX 310.322.7709
www.glentek.com

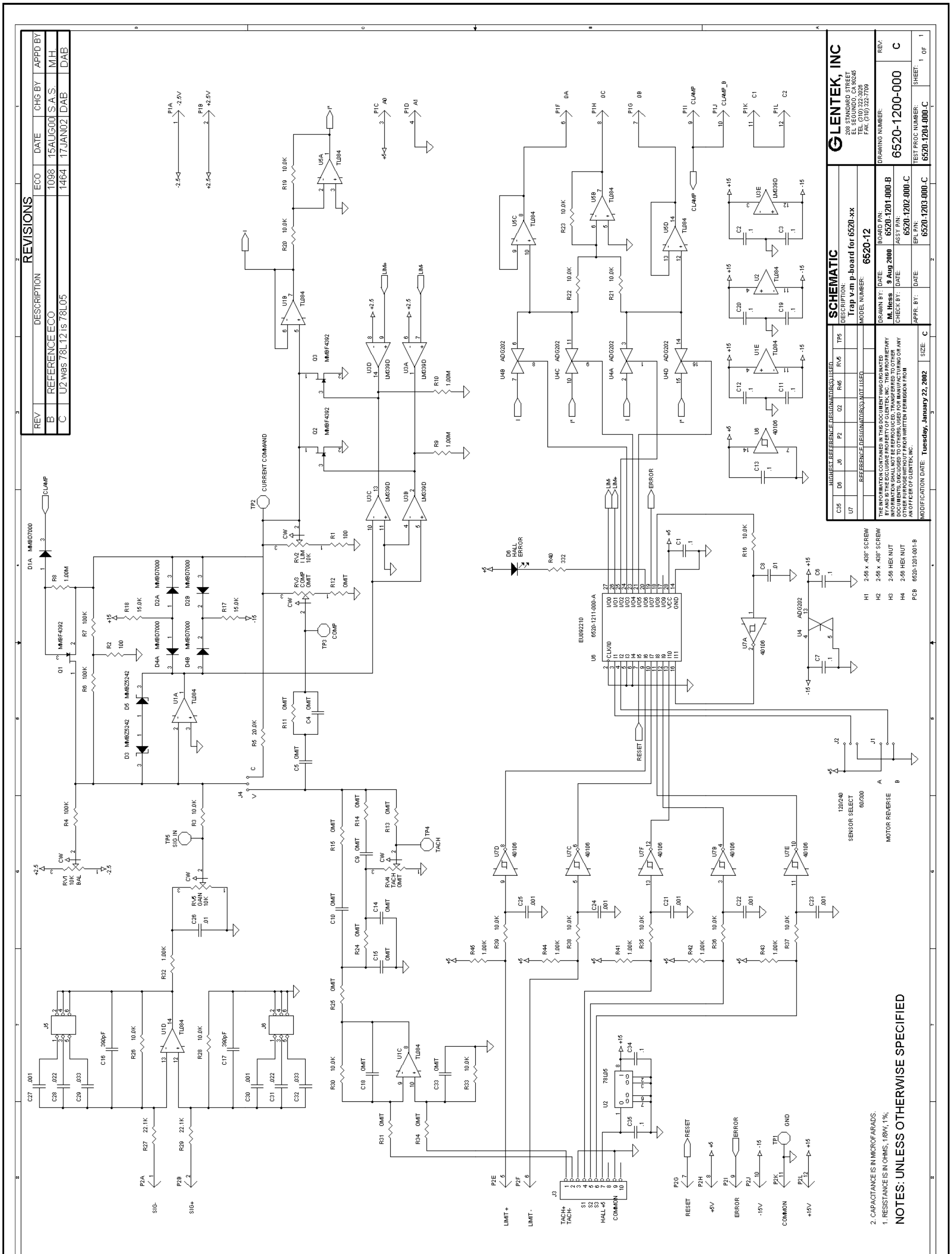
TITLE: SMA6520-50HF-12-00x,MODULE, HALL/TRAPEZOIDAL,24VDC FAN
SIZE: D DRAWING NUMBER: 6520-5050-000 REV: A
SCALE: 1.125:1 FILE: 6520-5050-000-A.DWG SHEET 1 OF 1

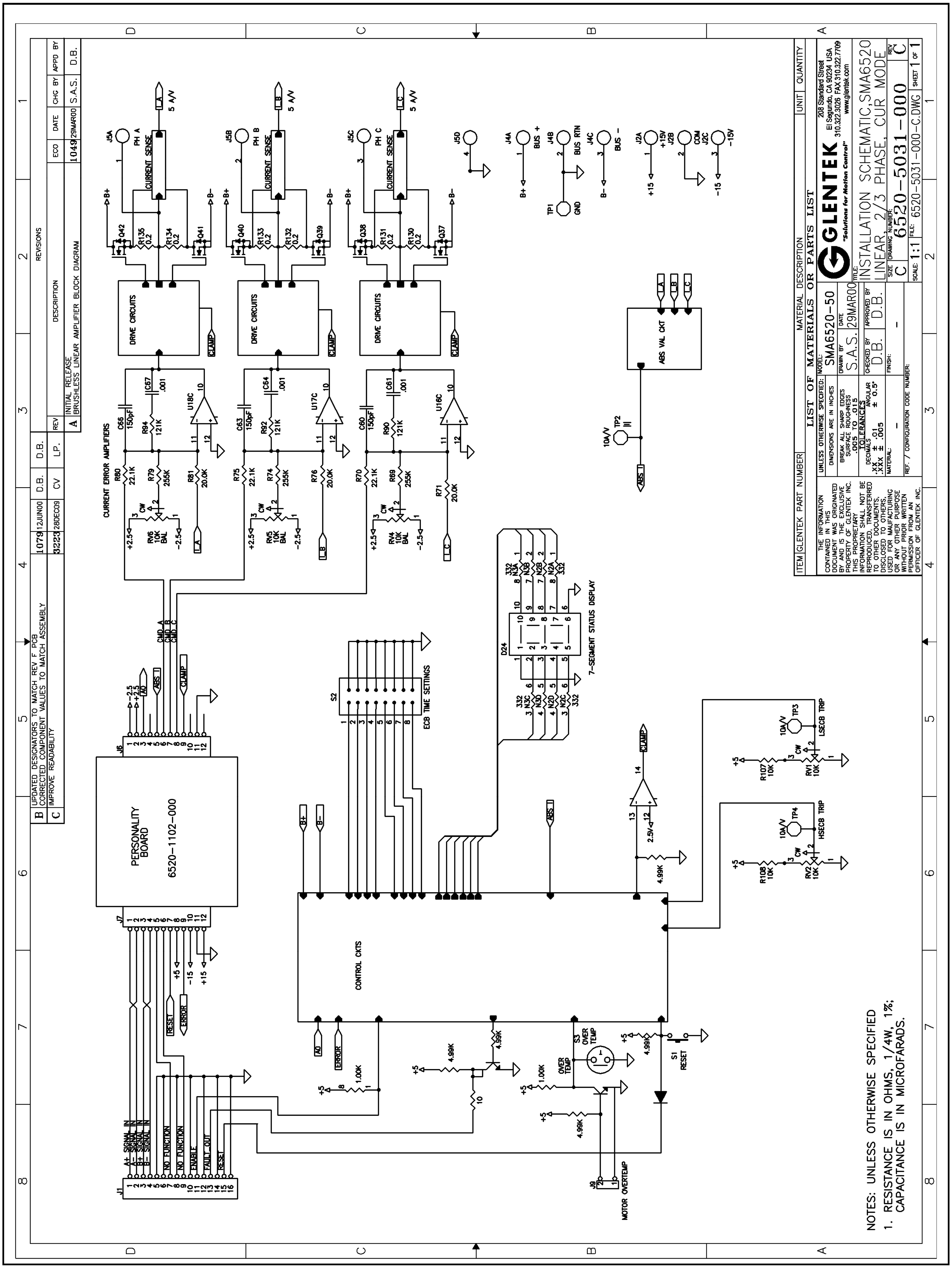

NOTES:
1.TRANSFORMER ORDERED SEPARATELY.
2. F201, F202, SHOULD BE: 20A, 250V, MDA.
3. MAXIMUM HEIGHT IS 8.0".
REVISIONS
A INITIAL RELEASE MULTI-AXIS INSTALLATION DRAWING 1079 12JUN00 S.A.S. C.V.
B UPDATE 3223 22DEC09 M.T. C.V.
T638 - TYPICAL TRANSFORMER
120VAC
FAN 120VAC
36VAC
COMMON
TB201
F201
F202
BR201
C201
C202
R201
R202
GA365-13
FAN201
AIR FLOW
TO TERMINAL BLOCK SLOT 1 & 2
TO A1,A2
B+
B-
COM
10.250
12.750
8.000
1.030
.375
LIST OF MATERIALS OR PARTS LIST
GLENTEK "Solutions for Motion Control"
208 Standard Street El Segundo, CA 90234 USA
INSTALLATION, SMA6520-2A-2
2 AXIS BASEPLATE
C 6520-5032-000 B
6520-5032-000-B.DWG
SCALE 1:1
SHEET 1 OF 1


REVISIONS
REV | DESCRIPTION | ECO | DATE | CHG BY | APPD BY
A | INITIAL RELEASE PCB ASSEMBLY DRAWING | XXX | 05JAN94 | D.L.C. | R.A.D.
B | REFERENCE ECO | 1098 | 15AUG00 | S.A.S. | M.H.
B | REFERENCE ECO CLEANUP ITEMS NO CHANGES | 1465 | 21JAN02 | C.J. | D.B.
1 | 6520-1100-000B | BILL OF MATERIALS | LOT | 1
ITEM | GLENTEK PART NUMBER | MATERIAL DESCRIPTION | UNIT | QUANTITY
LIST OF MATERIALS OR PARTS LIST
GLENTEK "Solutions for Motion Control"
208 Standard Street El Segundo, CA 90234 USA 310.322.3026 FAX 310.322.7709 www.glentek.com
MODEL: 6520-11
DRAWN BY D.L.C. DATE 05JAN94
CHECKED BY M.H. APPROVED BY R.A.D.
TITLE: ASSEMBLY, PREAMP, 2/3 PHASE, CUR MODE
SIZE B DRAWING NUMBER: 6520-1102-000 REV B
SCALE: 2:1 FILE: A6520-1102-000RB.DWG SHEET 1 OF 1
COM TP1 LIMIT TP2 GAIN ØA TP3 GAIN ØB TP4 INP ØA TP5 INP ØB TP6 INJ ØA TP7 INJ ØB TP8
RV1 RV2 RV3 U1 U2 U3 J1 J2 J3 J4 P1 P2
6520-1101-001-B
P1, P2
NOTES: UNLESS OTHERWISE SPECIFIED.
1. REFERENCE SCHEMATIC: 6520-1100-000-B
2. HATCHED COMPONENTS ARE OMITTED.


REVISIONS
REV | ECO | DESCRIPTION | DATE | CHG BY | APPD BY
B | 1098 | REFERENCE ECO | 15AUG00 | S.A.S. | M.H.
B | 1465 | REFERENCE ECO CLEAN UP NO CHANGES | 21JAN02 | C.J. | D.B.
GLENTEK, INC
208 STANDARD STREET
EL SEGUNDO, CA 90245
SCHEMATIC
2 Ph c-m p-board for 6520xx
6520-11
DRAWN BY: M. Hess
DATE: 9 Aug 2000
6520-1100-000
REV: B
BOARD P/N: 6520-1101-000-B
ASSY P/N: 6520-1102-000-B
EPL P/N: 6520-1103-000-B
TEST PROC NUMBER: 6520-1104-000-B
MODIFICATION DATE: Tuesday, January 22, 2002
SIZE: C
NOTES: UNLESS OTHERWISE SPECIFIED
1. RESISTANCE IS IN OHMS, 1/8W, 1%.
2. CAPACITANCE IS IN MICROFARADS.


REVISIONS
REV | DESCRIPTION | ECO | DATE | CHG BY | APPD BY
A | INITIAL RELEASE 6520-12 PCB ASSEMBLY DRAWING | XXX | 12MAY94 | M.H. | R.A.D.
B | REFERENCE ECO | 1098 | 15AUG00 | S.A.S. | M.H.
C | U2 WAS 78L12 IS 78L05 | 1464 | 17JAN02 | DAB | DAB
BAL
COM
LIMIT
COMP
TACH
GAIN
6520-1201-001-C
H1
H2
H3
H4
1 | 6520-1203-000C | BILL OF MATERIALS | LOT 1
ITEM | GLENTEK PART NUMBER | MATERIAL DESCRIPTION | UNIT | QUANTITY
LIST OF MATERIALS OR PARTS LIST
MODEL: GA6520-12
DRAWN BY S.A.S. DATE 5JAN94
CHECKED BY M.H. APPROVED BY R.A.D.
GLENTEK "Solutions for Motion Control"
208 Standard Street El Segundo, CA 90234 USA 310.322.3026 FAX 310.322.7709 www.glentek.com
TITLE: ASSEMBLY, PREAMP, HALL/TRAPEZOIDAL, CUR MODE
SIZE C DRAWING NUMBER: 6520-1202-000 REV C
SCALE: NTS FILE: A6520-1202-000-C.DWG SHEET 1 OF 1
NOTES: UNLESS OTHERWISE SPECIFIED.
1. REFERENCE SCHEMATIC: 6520-1200-000-C
2. HATCHED COMPONENTS ARE OMITTED.


REVISIONS
REV | ECO | DATE | CHG BY | APPD BY
B | REFERENCE ECO | 1098 | 15AUG00 | S.A.S. | M.H.
C | U2 was 78L12 is 78L05 | 1464 | 17JAN02 | DAB | DAB
GLENTEK, INC
208 STANDARD STREET
EL SEGUNDO, CA 90245
SCHEMATIC
Trap v-m p-board for 6520-xx
6520-12
M. Hess
9 Aug 2000
6520-1201-000-B
6520-1202-000-C
6520-1203-000-C
6520-1200-000
6520-1204-000-C
Tuesday, January 22, 2002
NOTES: UNLESS OTHERWISE SPECIFIED
1. RESISTANCE IS IN OHMS, 1/8W, 1%;
2. CAPACITANCE IS IN MICROFARADS.



INSTALLATION SCHEMATIC, SMA6520 LINEAR, 2/3 PHASE, CUR MODE
6520-5031-000
GLENTEK
"Solutions for Motion Control"
208 Standard Street El Segundo, CA 90234 USA
PERSONALITY BOARD 6520-1102-000
CONTROL CKTS
DRIVE CIRCUITS
ABS VAL CKT
7-SEGMENT STATUS DISPLAY
ECB TIME SETTINGS
CURRENT ERROR AMPLIFIERS
MOTOR OVERTEMP
NOTES: UNLESS OTHERWISE SPECIFIED
1. RESISTANCE IS IN OHMS, 1/4W, 1%; CAPACITANCE IS IN MICROFARADS.

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Omega Series Digital PWM Brushless Servo Amplifiers

- PWM (Pulse-Width-Modulated) Brushless servo amplifiers to 20KW

Analog Brush Type Servo Amplifiers

- Linear Brush type servo amplifiers to 2.6KW
- PWM (Pulse-Width-Modulated) Brush type servo amplifiers to 28KW

Analog Brushless Servo Amplifiers

- Linear Brushless servo amplifiers to 3.5KW
- PWM (Pulse-Width-Modulated) Brushless servo amplifiers to 51KW

Permanent Magnet DC Brush Type Servo Motors

- Continuous Torques to 335 in. lb.
- Peak Torques to 2100 in. lb.

Permanent Magnet DC Brushless Servo Motors

- Continuous Torques to 1100 in. lb.
- Peak Torques to 2200 in. lb.

GLENTEK

"Solutions for Motion Control"

208 Standard Street, El Segundo, California 90245, USA.
Telephone: (310) 322-3026; Fax: (310) 322-7709
www.glentek.com e-mail: sales@glentek.com